Perspective

Controlling the Spread of Vancomycin-Resistant Enterococci with Contact Precautions: Time for a Randomized Trial

Sanjay Saint, MD, MPH;*† Sherrie Atherton, RN, MS;‡ Benjamin A. Lipsky, MD;* Linda McDonald, MSPH, RN;* and Larry Strausbaugh, MD‡§

Isolations of vancomycin-resistant enterococci (VRE) have increased dramatically over the past decade in hospitals around the United States.[1] In hopes of curbing the nosocomial spread of VRE, the Centers for Disease Control and Prevention Hospital Infection Control Practices Advisory Committee recommended that contact precautions (CP) be implemented in the care of all hospitalized VRE-positive patients.[2] Requirements for CP in the care of VRE-positive patients contrast with those for body substance isolation (BSI),[3] an alternate system of precautions used in patient care (Table 1). Body substance isolation is similar to universal precautions but assumes that all body fluids may contain potential pathogens.[3,4] Body substance isolation is applied to all patients at all times, using appropriate barriers when contact between health care workers and moist body substances is anticipated. Body substance isolation precautions are not supplemented with other measures for the care of VRE-positive patients.[3,4]

Since CP for VRE-positive patients generally require more effort and expense than BSI precautions, it would be useful to establish their respective utilities in limiting nosocomial transmission of VRE. Accordingly, the authors retrospectively compared the experience at two similar medical centers that differ in their approach to VRE control. Both centers are part of the Veterans' Affairs system and are located in the Pacific Northwest. They have similar patient populations, strong academic affiliations, on-site microbiology laboratories, and inpatient and outpatient facilities that include intensive care units and nursing home units. Moreover, both centers perform transplantation procedures, and they have comparable statistics for discharges, patient care days, and average lengths of stay. Both centers have contended with VRE since 1994. One center has used CP and the other only BSI.

The cumulative incidence of VRE isolations at each center from 1994 to 1997 was compared. This involved only unique patient cases detected by cultures of urine, blood, and wounds that were obtained for clinical (*not* surveillance) indications. During the study period there were 70 cases per 27,047 discharges at the center using CP for VRE and 50 cases per 30,289 discharges at the center using only BSI. The cumulative incidence rate for VRE acquisition was significantly higher at the center using CP (0.26% vs. 0.16%; OR = 1.57; 95% CI = 1.08–2.29; P = 0.014).[5]

Without minimizing the magnitude of this difference, the authors would acknowledge several significant limitations of the approach to this study: (1) it was a retrospective comparison; (2) the institutions may have differed in significant ways that were not readily apparent, including their usage of vancomycin or other antimicrobials, or the degree of staff compliance with mandated guidelines; and (3) detection of VRE cases using only cultures obtained for clinical indications underestimates the true frequency of nosocomial transmission.

Nevertheless, the rates in the two centers were different and suggested no benefit for CP. The purpose in presenting this analysis is to urge that randomized, controlled trials be performed to compare different infection control methods for limiting transmission of VRE. Such trials would be methodologically complex because the unit of analysis is likely to be the ward or the hospital rather than the individual patient, because the intervention will need to be performed at a level other than that of each individual patient. Thus, the sample size required to detect a difference will be large. However, given the extra cost that CP imposes on the health care system, a definitive trial comparing CP with BSI or other infection control methods is necessary to justify its continued use. As the tide of antimicrobial resistance rises around the world, such trials are urgently needed to

*Veterans' Affairs Puget Sound Health Care System, Seattle, Washington; †Department of Medicine, School of Medicine, University of Michigan, Ann Arbor, Michigan; ‡Portland Veterans' Affairs Medical Center, Portland, Oregon; and §Department of Medicine, School of Medicine, Oregon Health Sciences University, Portland, Oregon.

Address correspondence to Dr. Sanjay Saint, Division of General Medicine, Department of Internal Medicine, University of Michigan Health System, 3116 Taubman Center, Box 0376, Ann Arbor, MI 48109-0376. E-mail: saint@umich.edu.

Table 1. Important Differences between Contact Precautions and Body Substance Isolation

*Contact Precautions**	*Body Substance Isolation†*
Infected and colonized patient placed in a private room, or cohorted with other patients with the same disease or organism.	Colonized and infected patients do not require private rooms unless they are unable to contain their secretions or excretions.
Gloves are worn on each entry into the room.	Gloves are worn only if contact with patient's moist body substances is anticipated.
Gowns are worn on each entry into the room when: (a) substantial contact with the patient or environmental surfaces is anticipated; (b) the patient is incontinent; or (c) the patient has diarrhea, an ileostomy, a colostomy, or wound drainage not contained by a dressing.	Gowns are worn only for anticipated soilage of employee's uniform or bare skin.
Rectal culture is performed on roommates of newly identified patients.	Rectal cultures of roommates of newly infected or colonized patients are not required.
Patient care equipment (e.g., stethoscope) is dedicated to individual patients.	Patient care equipment is not dedicated to single colonized or infected patients.
Precautions are continued until patient's cultures are negative for the epidemiologically significant organism (e.g., on three separate occasions 1 week apart).	Contact precautions are not applied regardless of culture results.
Colonized and infected patients are so identified when they are transferred to another facility or when re-admitted to same facility.	Colonization or infection status is not necessarily communicated to other facilities.

*Contact precautions are added to a basic system of isolation and precautions (e.g., universal or standard); †body substance isolation is a broad system of isolation and precautions that requires no additional precautions except for certain infections transmitted by the airborne route.

ensure that infection control practices are evidence-based.

REFERENCES

1. Centers for Disease Control and Prevention. Nosocomial enterococci resistant to vancomycin: United States, 1989–1993. MMWR CDC Surveill Summ 1993; 42:597–599.
2. Hospital Infection Control Practices Advisory Committee. Recommendations for preventing the spread of vancomycin resistance. Infect Control Hosp Epidemiol 1995; 16:105–113.
3. Lynch P, Jackson MM, Cummings J, Stamm WE. Rethinking the role of isolation practices in the prevention of nosocomial infections. Ann Intern Med 1987; 107:243–246.
4. Garner JS. Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol 1996; 17:54–70.
5. Fleiss JL. Statistical methods for rates and proportions. 2nd Ed. New York: Wiley and Sons, 1981.